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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

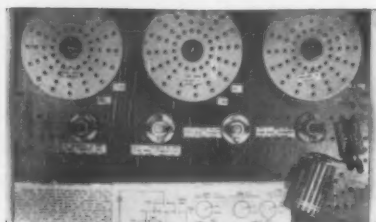


Becoming Extinct?

See Page 355

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WILD LIFE

Survival of Big Game

Survey of Asian and African countries shows many big game animals threatened with extinction unless various governments take stronger steps toward conservation.

See Front Cover

► MANY BIG GAME animals in the "new" nations of Africa and Asia face sudden extinction, without the help of stringent conservation efforts on the part of the new governments, animal expert Lee M. Talbot of the International Union for the Protection of Nature told SCIENCE SERVICE.

Mr. Talbot has just returned from a 40,000-mile survey of 30 Asian and African countries, where he made field studies of animals threatened with extinction. His investigations took him from the deserts of Saudi Arabia to Sumatran jungles no white man had penetrated before.

Progress of wildlife conservation practices in many of the countries is heartening, Mr. Talbot said, pointing as examples to the Asiatic lion preserve in India and the Javan one-horned rhino refuge in Indonesia.

Several governments have the equivalent of conservation departments, which are working hard to protect vanishing wildlife. The greatest present need, he said, is for more technicians trained in wildlife management in the area.

Leading the list of big game facing extinction are the Arabian oryx; several species of Near-Eastern gazelles; the Asiatic lion; and the great Indian, Javan one-horned and Sumatran rhinoceroses, he said.

One of the vanishing rhinoceros is shown on the cover of this week's SCIENCE NEWS LETTER.

Mr. Talbot found that tracking down the rare Javan rhino was a simpler matter than he had expected, once the long trek to their jungle preserve was accomplished.

He discovered that "you do not have to hunt the rhino; he hunts you!"

This rhino, of which only about 30 survive in the Javan refuge, has such a fearsome reputation among the natives that as soon as they see a track, they drop everything to climb up the nearest tree, Mr. Talbot said. A wise move, he pointed out, since the rhinos stay in very dense cover and may charge from ambush at any intruder.

The Indonesian government does an excellent job in protecting the rhinos, Mr. Talbot said, although poachers are constantly after them. The horns of this beast are greatly valued in the cities for their reputation as a powerful aphrodisiac, and bring a price of about \$2,500 each. Since the average laborer may make five cents a day, the temptation to poach on

these rare rhinos is understandable, he said.

Mr. Talbot's closest scrape with death on the expedition came during a hunt from elephant-back for the great Indian rhino in Assam. His party suddenly walked upon a female rhino with young. Infuriated, the rhino turned and charged Mr. Talbot's elephant, which fled in terror. During the ensuing quarter-mile race, punctuated by the elephant's wild trumpeting and the rhino's snorting, the mahout who led the elephant was tossed about as he clung on only by the elephant's ear. Mr. Talbot hung on to the bouncing saddle.

At last, the rhino drew up alongside the elephant and with a single blow cut a great gash into the elephant's side with an upward thrust of a lower tooth. Satisfied with the damage, the rhino finally stalked off.

To indicate the great size of the rhino, Mr. Talbot said the gash in the elephant was seven feet from the ground. He said that, unlike African rhinos, the Indian

rhino uses his tusks, not his horn, in battle.

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ANTHROPOLOGY

Chimpanzees Have Their Individual Differences

► CHIMPANZEES are not all alike.

Like humans, they have strong individual characteristics even when they are all living under uniform conditions, Dr. H. W. Nissen, assistant director of the Yerkes Laboratories of Primate Biology, Orange Park, Fla., told the American Anthropological Association meeting in Boston.

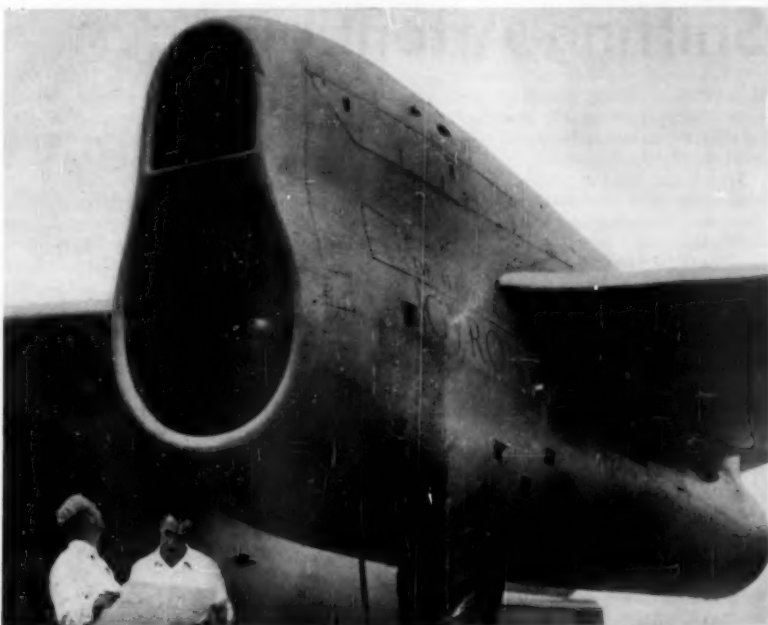
Some chimps are bright and some are dull, Dr. Nissen has found. Some are emotionally stable and others are not. Some have their own peculiar ways of walking, dancing, eating and rocking. Some baby chimps, like some baby humans, suck their thumbs.

Not all apes are good at aping the actions of others. There are marked differences in this ability, Dr. Nissen reported.

Even in personal appearance, chimpanzees vary widely in size and body proportions, as well as in hair color.

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A study of more than 1,000 lung cancer patients has indicated that more than 90% of this type of cancer can be detected by microscope examination of the patient's sputum.



SUPERSONIC ENGINE TEST—The de Havilland Gyron, described by its British manufacturers as probably the most powerful gas turbine engine yet flown, is being tested in England in one nacelle of a four-engine bomber. Designed for supersonic flight, the engine combines a very low specific weight with a rugged and simple structure. Thrust figure is still secret.

ARCHAEOLOGY

Restore Mayan City

► TIKAL, Guatemala, ten centuries ago one of the greatest and most splendid of ancient American cities, now deserted and overgrown with rain forest foliage, will soon be restored to its ancient glory.

An expedition from the University Museum in Philadelphia, under the direction of Dr. John Dimick, research associate of the Museum, will soon go to Tikal to cut away the jungle and restore its temples, palaces, paved expressways and long-dry reservoirs.

When the restoration is complete, Tikal will be the "finest architectural monument of American Indian civilization available to the public," Dr. Froelich G. Rainey, director of the Museum, said in announcing the expedition.

Tikal is possibly the oldest and largest site of Mayan civilization. Evidence found by the Carnegie Institution of Washington during exploration of the region indicates that Tikal was a dominant center of Mayan history.

The city was occupied for 2,000 to 3,000 years and was not abandoned until about the 10th century A.D.

It was rediscovered about a century ago, but has been accessible only by mule-back until the Guatemalan Air Force built a land-

ing strip nearby about five years ago. Now Tikal is within an hour's flight from Guatemala City.

Five great temples and dozens of smaller ones dominate the city center. The shrine-like temples rise from stepped pyramidal platforms and are capped by exotic carvings. One of the temples is as tall as a 20-story building.

Two of the largest temples face a 350-foot plaza around which are clustered smaller temples.

Linking the central section with outlying "suburbs" was an elaborately constructed network of graded roads, forerunners of today's expressways.

Associated with Dr. Dimick in the expedition are Dr. Edwin M. Shook, on loan from the Carnegie Institution of Washington, who is field director, and Dr. Linton Satterthwaite, curator of the American Section of the University Museum, who is chief archaeologist. The scientists are working in cooperation with the Guatemalan government.

When the restoration is completed, it is hoped that Tikal will become a mecca not only for archaeologists but also for tourists.

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PSYCHOLOGY

Shifting Attention

► WHEN A PERSON has to listen and look at important signals, how rapidly can he alternate his attention between eyes and ears?

This is the problem presented by the airplane pilot who must watch his instrument dials and listen to instructions over radio earphones.

Little is known about man's ability to alternate between such tasks at a rapid rate, Dr. E. T. Klemmer of the U.S. Air Force told a Symposium on Human Engineering, Personnel, and Training Research in Washington.

Dr. Klemmer reported what happened when he had men press appropriate buttons in response to three flashing light bulbs and the sound of three tones. Alternation of sound and light did not cause the men to slow down their response. As the rate of switching from light to sound increased, the errors piled up. This occurred even though the speed of presentation of both light flashes and sounds was slow enough so that the best men could respond to either alone without error.

Acceleration in an airplane can reduce the pilot's ability to read his instrument dials even when the gravity forces are not great enough to make him black out, Drs. M. J. White and M. B. Riley of Wright Air Development Center reported.

The scientists reported results obtained when men were required to read 12 dials simultaneously as gravity forces were stepped up and illumination of dial faces was cut down.

At the three highest brightness levels tested, errors were found to be at a minimum and increase of gravity forces up to three times the force of gravity did not cause errors to increase.

At a force of 4 g's, however, dimming the light caused a systematic increase in errors. At the two lower brightness levels, the number of errors increased as the g forces went up.

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METALLURGY

Join Ceramic and Metal For High Heat Material

► MATERIALS developed to cope with high temperatures demanded by the jet age were described at the American Society of Mechanical Engineers meeting in Chicago.

A combination of ceramic and metal, the cermets have been designed for use in turbojet engines, gas turbines, rocket motors and some parts of nuclear reactors.

Cermets and particularly the metal

bonded titanium carbides, which head the list of the new materials, are suitable for use in structural parts at temperatures of 1750 to 1800 degrees Fahrenheit, J. T. Norton, professor of metallurgy at Massachusetts Institute of Technology, reported.

Above 1800 degrees, he stated, cermets are too brittle. He did predict, however, that materials will be found for use at higher temperatures.

A serious competitor of cermets in the high-temperature field, Prof. Norton reported, are molybdenum alloys with high-temperature properties superior to cermets.

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GEOPHYSICS

Aid Space Ship Designers

► RESEARCH with earth's first man-made satellites will help future designers of space stations and space ships, the scientist in charge of U.S. participation in the International Geophysical Year said in Chicago.

Cosmic ray measurements and counts of small meteoric particles to be made from the satellites will be of particular interest "from a practical point of view," Dr. Joseph Kaplan told the American Rocket Society meeting.

"Cosmic rays interest the promoter of space travel," the University of California physicist said, because they are a possible hazard to man. Their effects on humans above the earth's protecting atmosphere are unknown. Their origin is also unknown, but thought to be linked fundamentally to the structure of the universe.

Tiny meteoric particles too small to be seen as "shooting stars" rain on the earth, possibly as many as 1,000 tons per day sifting to the surface, Dr. Kaplan said. These might pit and eventually destroy man-made vehicles in space, so are of concern to space station designers.

Dr. Kaplan outlined the types of experiments for which the earth satellites to be launched during the International Geophysical Year in 1957-58 will be used.

Included in his list of seven was the first direct determination of the density of hydrogen atoms and ions in interplanetary space, which "is not a complete vacuum." Scientists estimate there is one hydrogen

atom occupying about each three cubic inches, or one cubic centimeter, of space on the average.

Dr. Herbert Friedman and his co-workers at the Naval Research Laboratory in Washington suggested the satellite be equipped to measure the sun's hydrogen radiation in the part of its spectrum known as Lyman alpha. At the same time, the hydrogen radiation in this range would be measured from another direction.

Comparison of the two would give the measure of the amount of hydrogen in interstellar space.

Other types of experiments outlined by Dr. Kaplan were:

1. Determination of the outer atmosphere's density at various heights by observing how the satellites' orbits change due to air drag.

2. Obtaining more accurate measurements of the earth's diameter at the equator and of intercontinental distances.

3. Observing changes in the sun's ultra-violet radiation over long periods of time.

4. Studies of intensities and variations of cosmic rays and other radiation impinging on the atmosphere.

5. Determining the mass distribution in the earth's crust along the points over which the satellite passes.

6. Observing the giant ring of invisible electricity circling the earth, known as the Störmer ring current.

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EDUCATION

Synthetic Training Urged

► THE FIRST SPACE SHIP zooming into the uncharted interplanetary dark will be manned by humans who have learned their jobs and met all foreseeable emergencies in a ground-based synthetic trainer.

The earthbound device will be much more complex than any now used for training jet pilots, G. Vincent Amico of the Special Devices Center, Sands Point, N. Y. The Center, run by the Office of Naval Research, has long been a leader in developing synthetic training equipment.

Crew quarters, Mr. Amico says, are very important in duplicating the environment that would be encountered during space flight. Demands for comfort would "far exceed" any now built into crew compartments, since time spent in the ship would be so much longer than present-day flights.

The space flight trainer would have to duplicate faithfully both successful flight performance and emergency conditions. Complex computing and control equipment, possibly rivaling those in a space ship itself, would be needed to transmit infor-

mation from the trainer to the crew and the instructor.

"Peculiar to space flight," Mr. Amico points out, are the problems of exceedingly fast take-off, changes in the ship's mass, gravity variations, and recording and predicting the ship's path.

The instructor's station would be the simulator's nerve center. Television cameras would allow constant observation of each man's actions and conduct as he did his job and reacted to imposed conditions. The instructor might generate uncomfortable temperatures, dangerous pressures or excessive radiation to indicate possible difficulties of actual operations.

"Those who participate in space flight some time in the future will need a supreme confidence that could be gained only by repeated experience with conditions approximating as nearly as possible the most challenging of earth-man's frontier, that of space beyond the earth's atmosphere," Mr. Amico concludes. His summary of training needed for space flight is outlined in *Research Reviews* (Nov.).

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CAM MACHINE—To speed production of finished jet engines, this device takes coded information punched from the blueprint onto a plastic tape and "reads" the shape of the required cam, then instructs the tool performing the cutting operation. It was developed by Bendix Aviation Corp.

ARCHAEOLOGY

Negev Wilderness Once Had Many Settlements

► NEGEV, the desert region of Israel at present the site of conflict between Egyptians and Israelis and which engineers are trying to make "blossom like the rose," was not always empty wilderness. This area has been called the "Wilderness of Zin."

Hundreds of ancient settlements existed there, dating back to prehistoric time and down to and through the times of Abraham and beyond, Dr. Nelson Glueck, Biblical archaeologist of Hebrew Union College, reported to the American Philosophical Society meeting in Philadelphia.

Leaning on the Bible as a guide, Dr. Glueck has been making a thorough archaeological, as well as economic, survey of the whole of Negev. His discoveries there are in harmony, he reported, with accounts in the Book of Genesis describing Abraham's journeys from Palestine to Egypt and back again.

The Bible, he has found, is an invaluable aid in locating ancient sites and in studying the history of the ancient Near East.

"Some of this material," he told the American Philosophical Society, "was recorded by eye witnesses, some culled from contemporary records, and still other material was long transmitted through the amazingly accurate phenomenon of historical memory before being committed to writing in the pages of the Bible."

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GEOCHEMISTRY

Dating Of Past Hindered

Weapons tests by both United States and Russia, resulting in inaccurate dating, have forced development of new methods of dating age of materials using radiocarbon 14.

► **ATOMIC WEAPONS TESTS** on both sides of the Iron Curtain have forced scientists to adopt new techniques for dating ancient materials by their radioactive carbon 14 content.

In a series of attempts to date materials by the carbon 14 method, reported in 1953, a group of Yale University scientists found acceptable results were obtained only when nuclear weapons were not being tested in Nevada or the Pacific.

Later, in August, 1954, the Yale scientists found some test blanks of anthracite coal used in dating were contaminated, presumably by Soviet nuclear explosions.

They then were using the solid-carbon dating system developed by Dr. Willard F. Libby of the University of Chicago, now a U. S. Atomic Energy Commissioner. In this system, carbon in fossil materials to be tested is isolated as solid carbon and checked for radioactivity, which measures its approximate age.

Trouble appeared when the increased "radioactive background" in the air due to nuclear explosions became mixed with radiation from the carbon, giving false readings.

In a new series of datings reported by Drs. Richard S. Preston and E. S. Deevey and Mrs. Elaine Person of Yale, the solid-carbon system was abandoned for the "acetylene" system developed by Dr. Hans Suess of the U. S. Geological Survey.

Dr. Suess' method for carbon 14 dating involves changing the carbon into the gas, acetylene, instead of keeping it a solid. This allows the testing to be carried out in a vacuum, thus shielding it from background radiation in the air.

Most of the dates in the new list of fossil materials studied by the Yale laboratory, including all satisfactory figures obtained since February, 1954, were taken by the Suess method, the scientists report in *Science* (Nov. 18).

Results of dating ancient materials from Canada indicate the last glacial stage of the Ice Age occurred much closer to the present than many geologists have suspected.

The date of wood found under glacial deposits near St. Pierre-Les-Becquets, Quebec, was set as greater than 30,000 years ago, giving a rough approximation of the start of this glacial period in that area.

Dating of buried peat near Dugwal, Ontario, showed the ice had retreated enough to allow peat moss to grow by 6,730 plus or minus 200 years ago, setting a limit on the glacial stage's duration.

Many experts have thought the last glacial stage waned some 25,000 years ago,

instead of the much more recent date the carbon 14 indicates.

The Yale scientists were able to give a close date to the mighty eruption of Mount Mazama that formed Crater Lake, about 7,610 plus or minus 120 years ago. This figure was derived by dating rodent droppings found in Paisley Cave, Ore., buried immediately beneath the pumice layer strewn by the erupting volcano.

New light was thrown on an archaeological problem as the carbon 14 dating disclosed charcoal from a Saladero Indian culture site in Venezuela to be about 2,800 years old. This gave an unexpectedly early date for the first appearance of agriculture and pottery in the eastern Caribbean.

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ASTRONOMY

National Observatory

► **A NATIONAL ASTRONOMICAL observatory**, long the dream of American astronomers, will be started within the next two years.

The first of its kind in the United States, the observatory probably will be run jointly by several institutions. It would give astronomers from all parts of the country much better research facilities than their institutions separately can afford.

A five-year plan for the establishment of the observatory was outlined to astronomers at their semi-annual meeting in Troy, N. Y., by Dr. A. E. Whitford of the University of Wisconsin Observatory.

He was one of the five-member panel appointed nearly two years ago by the National Science Foundation to survey the long-term needs in astronomy. The Foundation has announced a grant of \$279,000 to the University of Michigan to look for an appropriate site, and to start work on a small telescope, probably a 36-inch one.

It is expected the new observatory will be located somewhere in the southern part of the country, probably in the Southwest, since most astronomers agree this region is tops for good observing weather.

The planned facilities would "increase the observing opportunities of all astronomers, particularly those from the East," Dr. Whitford told *Science Service* by telephone.

Although astronomers have known for some time of proposals for a national observatory, Dr. Whitford's announcement was the first public mention of the plans. (See *SNL*, Oct. 31, 1953, p. 279.)

Having one or more telescopes available

TECHNOLOGY

Miniature Oil Refinery Hit by Radiation

► **MINIATURE MODELS** of commercial petroleum refining units are being tested in the Esso Research and Engineering Company radioactive "hot" room at Linden, N. J.

To find out how gamma rays make possible faster and more efficient chemical reactions, scientists are using a cobalt-60 source rated at 3,100 curies, one of the strongest radioactive sources in commercial research.

The tests are aimed at finding out if gamma radiation from the cobalt-60 can assist or replace some of the factors used in present commercial refining.

The radioactive "cave" has just been put into regular use.

In addition to small-scale chemical operations, barrels of oil and other material are exposed to gamma rays given off by the cobalt source to investigate the effects of atomic and other radiation upon petroleum products.

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for observations by any astronomer in the United States is expected to result eventually in an increase in number and improvement in quality of astronomers in general.

Besides Dr. Whitford, other members of the special survey team appointed by the National Science Foundation to investigate astronomical needs were Dr. Robert R. McMath of the University of Michigan's McMath-Hulbert Observatory, who was chairman; Dr. I. S. Bowen, director of Mt. Wilson and Palomar Observatories; Dr. Bengt Stromgren, director of Yerkes Observatory, and Dr. Otto Struve, director of the University of California's Lick Observatory.

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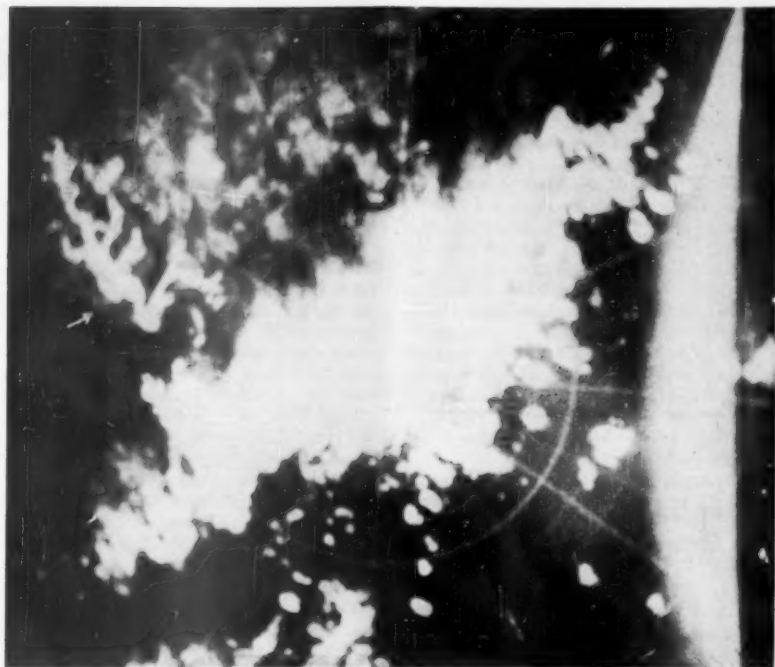
ENTOMOLOGY

New Foreign Farm Pest Gets Beachhead in Nation

► **ANOTHER FOREIGN FARM PEST**, a destructive worm of soybeans, has slipped into the United States, the U. S. Department of Agriculture announced.

This microscopic worm pest, formerly known only from Japan and Manchuria, turned up last year in North Carolina, where it has been found infesting some 700 acres in New Hanover County. It is not known to have spread beyond that state. Very little is known about the nematode's origin, the USDA said. Called the soybean cyst nematode, it causes dwarfing and yellowing of soybean plants.

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LIGHTNING ON RADAR—A radarscope photograph taken last year at a Midwestern station shows how radar can be used to detect lightning strokes otherwise hidden. Distance from the center to the edge of the scope is 115 miles. An echo from a lightning stroke over 100 miles long is shown to the northwest of the station (see arrow). Most of the light areas are caused by echoes from the rain in the storm.

METEOROLOGY

Spot Hidden Lightning

► **HIDDEN LIGHTNING FLASHES**, some 100 miles long, have been spotted for the first time by radar, Dr. Myron G. H. Ligda of A. & M. College of Texas reported at the American Meteorological Society meeting in Honolulu, T. H.

The lightning strokes previously were hidden from direct observation by clouds. Using radar's ability to see through miles of cloud and rain, the spectacular nature of the high-level discharges was discovered.

In Midwestern thunderstorms along the front separating masses of warm and cooler air, lightning strokes up to 100 miles long have been found. Theories of lightning discharge are expected to need revision because of the new observations.

One practical use for the discovery would be locating storm regions that were highly active electrically and might be hazardous.

Dr. Wendell Mordy, Pineapple Research Institute and Hawaiian Sugar Planters' Association, and Dr. John Hurdiss, Hawaiian Pineapple Company, reported to the meteorologists their experiments on the Island of Lanai to determine how much water drips from trees due to impinging cloud droplets.

Amounts greatly exceeding the rainfall in the area were measured. The two scientists suggest that "an appreciable amount" of water can be obtained either by tree planting or from barriers especially built to trap the water in clouds.

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WILDLIFE

Kangaroos Fleeing Flame Help Spread Fires

► **KANGAROOS** are a fire hazard, sheep herders in the Injune district of Queensland have discovered.

Kangaroos with their fur in flames hop across bushfire breaks, spreading fire as they flee, the herders report. They say the kangaroos are the biggest problem in fighting bushfires.

Fires spread by kangaroos burned for days in a recent outbreak which struck in an area of about 70 square miles near Injune, 381 miles northwest of Brisbane.

H. Stephenson, a shepherd, said many dead kangaroos were found in the areas.

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PUBLIC HEALTH

See Danger in TB Death Rate Slowdown

► **THE "SPECTACULAR" DECLINE** in the tuberculosis death rate in recent years is slowing down. TB fighters are concerned.

From 1950 to 1953 the average annual decline was 18%. In 1954, however, the decrease from 1953 slowed to 14%. Preliminary figures for the first quarter of 1955 show an even greater slowing. The rate of decrease was only 10% from the first quarter of 1954.

Does the slowdown mean that the three great drugs used in treating tuberculosis, streptomycin, PAS and isoniazid, are reaching the limits of their effectiveness? Has death from TB merely been postponed, not prevented? Will the slowdown continue and the death rate decline even more slowly?

Such questions point the need for further research and continued efforts in the fight against the great white plague, Dr. James E. Perkins, managing director of the National Tuberculosis Association, New York, said in a foreword to the association's annual report.

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ANTHROPOLOGY

Thought Control Used By Southwest Indians

► **THOUGHT CONTROL**, now regarded as completely un-American, is a native practice of American Indians.

This fact was indicated by a report to the American Anthropological Association meeting in Boston by Prof. Edward P. Dozier, anthropologist of Northwestern University, who is of American Indian ancestry.

Among the Rio Grande Pueblo Indians, the core of their native beliefs and attitudes persists in spite of extensive contacts with Plains Indians, Spanish colonists and Anglo-Americans.

Basic Pueblo belief, Prof. Dozier told the meeting, is that all members of the tribe must work together in cooperation and unity. If any one man holds ill feeling toward anyone else or any group of persons, or even if he dislikes any aspect of the universe or finds it ugly, then it is believed that the balance of the universe is upset. Illness, drought, famine or other misfortunes may afflict the whole tribe.

The Pueblo Indian is constantly searching his own conscience for harmful thoughts or attitudes. If he is still satisfied with his own state of mind, and illness or misfortunes persist, he begins to look into the thoughts and attitudes of his neighbors.

Constant spying on the neighbors and even close relatives is, therefore, a typical Rio Grande Pueblo pattern, Prof. Dozier said.

Science News Letter, December 3, 1955

TECHNOLOGY

Investigate Why Fish Develop Rancid Flavor

► **WHY FRESH FISH** become not-so-fresh is being investigated at the University of California's food research laboratory, Davis.

Fresh fish, even when refrigerated, can be kept only a short period before a rancid off-flavor appears. Under the direction of food technologist Aloys L. Tappel, the laboratory plans to investigate chemical changes in the fish oils that lead to rancidity.

When these reactions are worked out, the laboratory will try to find chemical treatments to slow down the appearance of rancid flavors.

The laboratory will work mainly on fish of commercial importance in California, such as tuna, salmon, halibut and sardines, Mr. Tappel said. The project is being conducted in cooperation with the U. S. Fish and Wildlife Service.

The investigations will also include work on fish by-products, such as fish oils and meals used for poultry feed. By cutting down on rancidity in the meal, a more nutritious feed could be developed for chickens, Mr. Tappel said.

Science News Letter, December 3, 1955

GEOPHYSICS

Earth Satellite May Circle for Many Weeks

► **AT LEAST ONE** of the ten instrumented satellites to be launched during the International Geophysical Year should circle the earth "for many weeks," Dr. Joseph Kaplan of the University of California predicted in Troy, N. Y.

He told the American Astronomical Society meeting that one or more satellites would circle the earth this long if satisfactory orbits are achieved.

The satellites will travel at about 18,000 miles per hour, girdling the earth approximately every hour and a half. Their nearest point to earth will be some 200 to 250 miles, Dr. Kaplan said, while the farthest point will be 800 or 900 miles. The difference is because the orbit at first will be elliptical, not circular.

As chairman of the U. S. National Committee for the International Geophysical Year, during which the satellites will be launched, Dr. Kaplan revealed for the first time to the astronomers the nine members of the Technical Panel on the Earth Satellite Program.

The panel, Dr. Kaplan said, will be responsible "for developing, coordinating and directing the over-all scientific satellite effort."

Its chairman is Dr. R. W. Porter, a consultant on communications and control equipment to General Electric Company.

Besides Dr. Kaplan, the members include Hugh Odishaw, executive secretary of the U. S. geophysical year committee; Dr.

Homer E. Newell of the Naval Research Laboratory; Dr. W. H. Pickering, director of the University of California's Jet Propulsion Laboratory; Dr. A. F. Spilhaus, dean of the University of Minnesota's Institute of Technology; Dr. Lyman Spitzer, Princeton University astronomy professor; Dr. J. A. Van Allen of the University of Iowa, and Dr. F. L. Whipple, director of the Smithsonian Astrophysical Observatory.

In outlining the astronomical observations to be made during the International Geophysical Year, Dr. Kaplan said that, although rockets had briefly pierced the "ion curtain," the satellite program would make a permanent breach. The ion curtain is the ionosphere, a thin region of rarefied gas high in the atmosphere, in which are found free positive and negative ions split apart by the sun's ultraviolet energy.

Science News Letter, December 3, 1955

ENTOMOLOGY

Traveling Bees Hungry On Home Schedule

► **THE WORLD'S** most traveled honeybees, with two transatlantic flights to their credit, are still not sophisticated enough to know they should alter their appetites to agree with men's clocks. (See SNL, July 16, p. 34.)

Completing the second half of an international experiment, a group of honeybees trained to feed at a given hour in New York City were flown to Paris, where, ignoring the difference between New York and Paris clocks, they emerged from their hives exactly 24 hours later for their daily meal.

To Dr. Max Renner of the University of Munich, who conducted the experiment, this means that bees possess a kind of internal "clock" to measure the passage of time, independent of such external "clocks" as the position of the sun.

The experiment was started in June, when part of a colony of 5,000 honeybees were trained by Dr. Renner to feed at a specific hour in Paris. The whole colony was flown to New York in less than a full day. There at the American Museum of Natural History, the trained bees emerged right on schedule for their food on the same 24-hour cycle. This seems to prove the internal "clock," but Dr. Renner wanted to be sure.

So he trained another group from the colony to feed at a different hour, then flew them back to Paris.

The transatlantic trip also failed to disturb the second group, for they kept to the 24-hour regime. And Dr. Renner was able to announce that a bee's "memory" of time intervals can function independently of regular external factors such as the rhythm of night and day.

The next big question Dr. Renner hopes to solve, says Dr. Theodore C. Schneirla of the American Museum, is whether the internal "clock" is innate in bee nature, or whether it is impressed on them during their early development by environmental factors.

Science News Letter, December 3, 1955

IN SCIENCE

DERMATOLOGY

Cortisone Affects Skin Layers Differently

► **CORTISONE**, adrenal gland hormone famous for its anti-arthritis action, affects the surface skin differently from the way it affects the dermis, or true skin lying below the surface layers.

In fact, cortisone's action on the surface skin, or epidermis, is an indirect one resulting from its action on the under skin.

These findings, made in studies of wound healing, hair regeneration and experimental skin cancers, are reported by Drs. Theodore Gillman, Jack Penn, Doris Bronks and Marie Roux of the University of Natal at Durban, Natal, and the Brent-hurst Clinic, Johannesburg, South Africa, in *Nature* (Nov. 12).

Cortisone delays but does not stop the formation of skin cancers experimentally induced by painting cancer-causing chemicals on the skin of laboratory animals, the scientists found. Microscopic examination of the skin of cortisone-treated animals showed malignant change within the surface skin, even though examination without a microscope failed to show any cancerous changes.

When the hair is plucked from the skin of mice and cortisone is applied, the hair does not regrow. The reason, apparently, is that the cortisone has suppressed the invasion of the under skin by new surface skin cells, and has also made it impossible for the underlying connective tissue to form new hair roots.

Science News Letter, December 3, 1955

ANTHROPOLOGY

Environment May Count More Than Once Thought

► **BLACK OR BROWN SKIN**, prominent or dish-shaped nose, kinky or straight hair, in fact every anatomical trait commonly used to distinguish one race from another may be changed by influence from the environment, Dr. Russell W. Newman of the Climatic Research Laboratory, Natick, Mass., told the American Anthropological Association meeting in Boston.

Even the shape of the skull, much used by scientists in describing people, can be changed by either under- or over-nutrition.

Current studies of the world-wide distribution of various human characteristics may show that a great many previously thought to be determined by the racial heredity of the person are really related to the part of the world he lives in, Dr. Newman said.

Science News Letter, December 3, 1955

THE FIELDS

BIOCHEMISTRY

Canals in Body Cells Act as Storage Cisterns

► SOME CELLS of the body have within their microscopic selves systems of canals. These canals apparently serve as cisterns for temporary storage of materials destined for distribution to other parts of the body.

The materials might be the hormones and enzymes that play vital roles in body chemistry and functioning.

Such canals in some cells of the pancreas, big gland best known because part of it produces anti-diabetic insulin, have been made visible under the microscope by a method developed by Dr. Owen Lewis Thomas of Napier, New Zealand.

The method was to inject the canals with a mass consisting of laked blood medium. After the cells were sliced thinner than paper, they were stained and examined under the microscope. Details of the method and findings are reported by Dr. Thomas in *Nature* (Nov. 19).

Science News Letter, December 3, 1955

ASTRONOMY

Ask Search for Moons Of Earth and Planets

► THE EARTH and other planets may have small moons not yet discovered, Dr. Robert S. Richardson of Mt. Wilson and Palomar Observatories believes.

Searching for the satellites by eye rather than through telescopes might be the most likely way of finding them, he reports in the *Bulletin of the Astronomical Society of the Pacific* (Sept.).

Small moons of other planets, such as Phobos and Deimos that circle Mars, are valuable for revealing a planet's mass more accurately than otherwise possible.

"Among the most useful discoveries that could be made in the solar system would be satellites for Mercury, Venus and Pluto," Dr. Richardson says. The masses of these planets can be found only by their effects on other bodies, extremely difficult to spot.

Dr. Richardson has calculated the maximum distances and periods of satellites for each of the sun's nine planets. The greatest distance at which the earth's gravity would keep a natural satellite circling and prevent it from escaping into the sun would be 927,000 miles. The moon's distance varies from 221,463 miles to 252,710 miles.

A search for small satellites between the earth and the moon is being made for the Defense Department by Dr. Clyde Tombaugh, who discovered the ninth planet, Pluto.

Tiny earth satellites, if they exist, would not have been spotted before because of

their extremely rapid motion, too fast to be caught on the usual photographic plates.

Another reason possible small earth moonlets have not been seen yet is that they would spend most of their time in the earth's shadow, and would not shine since they have no light of their own.

Although the chances of finding undiscovered satellites of planets are not great, they are "not quite as dim" as might be thought, Dr. Richardson states, noting that three have been spotted in the last six years.

Dr. Gerard P. Kuiper of Yerkes Observatory, Williams Bay, Wis., discovered a close satellite of Uranus in 1948 and a distant satellite of Neptune in 1949. In 1951, Dr. Seth B. Nicholson of Mt. Wilson and Palomar Observatories discovered the twelfth satellite of Jupiter, the fourth he had found since 1914.

Science News Letter, December 3, 1955

ANTHROPOLOGY

People of Inland Asia Are Pretty Much Alike

► INLAND ASIANS, of which there are more than 15,000,000, have a surprising uniformity of body build, Dr. Marshall T. Newman of the U. S. National Museum told the American Anthropological Association meeting in Boston.

Nearly all inland Asians are shorter than average in height, heavy in body weight, with long trunks and short legs.

It is difficult to separate the influence of environment from that of race, Dr. Newman suggested. Thus, the inland Asians of the core area are large-headed and large-faced, because they are predominantly Mongoloids.

Mongoloids probably have large heads and large faces, just as they have small noses and padding of fat on their faces, because such features have a survival value in extremely cold climate.

Some parts of inland Asia are colder than others. Average January temperatures range from 27 degrees Fahrenheit in the Fergana Valley Kirghiz to minus 39 degrees in the Viliui Yakut. This is greater than the temperature difference between Salt Lake City, Utah, and Churchill, Hudson Bay, Canada.

Yet Dr. Newman noted no gradations in body build. He accounts for uniformity of body size and shape by the extraordinary amount of large and recent movements of peoples. The people did not stay long enough for natural selection to bring about adaptation to the specific climatic conditions.

Although new environmental conditions can produce definite physical changes, these are limited, Dr. Newman said. The major agency for gross change is natural selection. This takes generations.

The movement of the peoples of inland Asia would also lead to racial intermixture that would tend to have a leveling effect on the physical characteristics.

Science News Letter, December 3, 1955

ENTOMOLOGY

Scientist Tricks Females Into Revealing Age

► A FEMALE'S TRUE AGE can be uncovered at last.

The new technique, worked out by a zoologist with the University of Durham, England, requires complete dissection of the female. Up to now it shows promise only for flies and mosquitoes.

Determining the age of mosquitoes and flies is important in studying their habits, especially those connected with disease transmission. To make them yield their secret, zoologist L. Davies dissected female black-flies, *Simulium ornatum*, which suck the blood of cattle.

He found the younger flies contain visible fat-bodies, particularly in the forward abdominal segments; while the older flies had none, except in small amounts in the last abdominal segments.

Up to 10% of the female flies, however, maintained their feminine secret by falling into neither group. Examination of flies of known age showed that those with fat-bodies were not more than seven to ten days old, Dr. Davies reports in *Nature* (Nov. 19).

Residual ripe eggs were found only among the older females. Since a blood feed is necessary before ripe eggs are produced in this species, the scientist concluded that some, and probably most, of the flies without fat-bodies had taken their share of blood, while none of the youngsters had.

Science News Letter, December 3, 1955

ANTHROPOLOGY

Teen-Agers Are Problem In Africa as Well as Here

► TEEN-AGERS are a problem in Africa as well as in New York, Dr. Hortense Powdermaker, anthropologist of Queens College, New York, told the American Anthropological Association meeting in Boston.

In Africa, the difficulty is caused by a conflict between a conscious desire for modern ways of life and conveniences and an unconscious longing for a simple, unpressured life in their native tribes.

Dr. Powdermaker collected essays written by boys and girls in elementary school in Northern Rhodesia, in the heart of a booming copper mining area.

Both boys and girls said they wanted to live where they could have a good job, sports and movies, an automobile and radio, in other words, in one of the European towns of Africa.

On the other hand, when asked what they would prefer to be if they could have a non-human life, three-fourths of the boys and half the girls said they would like to be a bird. This was interpreted by Dr. Powdermaker as an unconscious desire for an easier, or tribal, life with less pressure from ambition.

Science News Letter, December 3, 1955

METEOROLOGY

Computing The Weather

Routine use of giant electronic computer foreshadows the day when nation-wide weather predictions will be made automatically by a centrally located machine.

By ANN EWING

► THE WEATHER FORECASTER of the future will be an electronic computing machine.

One has already been in routine operation for seven months, daily turning out maps of the whirling masses of air that make our weather. Its charts are at least as accurate as those produced by human meteorologists using their hard-learned, rule-of-thumb methods.

Routine use of this computer, operated by the Joint Numerical Weather Prediction Unit in Suitland, Md., foreshadows the day when weather forecasting will be entirely automatic.

Weather information will be automatically recorded and transmitted to a centrally located computer.

The computer will digest and edit this information into the form it requires.

Then it will make the forecast, transmitting it to the hundreds of offices where local weather predictions are issued.

There the human meteorologist will still be needed to garnish the machine-drawn map with his special knowledge of local conditions. Some weathermen foresee the day when even the extremely varied local conditions will be taken into account by one or more centrally located computers.

Unemployment Not Threatened

Although this may seem to threaten meteorologists with unemployment, what the computer is actually doing is releasing weathermen from routine drudgery. Instead of spending a major part of a working day plotting data and drawing lines on charts, the weatherman can start with the chart already drawn for him by the machine.

Thus he can spend much more time in actual forecasts of local conditions, making more accurate his predictions of such factors as precipitation and cloud cover.

Routine use of the machine will also give meteorologists more time to study such complex problems as formation of hurricanes, tornadoes and thunderstorms, what causes high and low pressure areas to form, and how and why the atmosphere works as it does.

One key to the computer's present success in forecasting weather is the fact that the machine, given proper directions, can perform routine calculations at a fantastic rate. But no matter how fast it operates, the directions have to come from humans,

which is the second key to the computer's success.

Without knowledge of how the atmosphere works, meteorologists would not have been able to give the computer correct instructions. They have learned that atmospheric motions are governed by certain laws, which can be expressed mathematically and solved, although now only when the laws are much simplified.

Nevertheless, using them even in that form is one step in eliminating subjective judgment, based on the weatherman's experience and skill, from weather forecasting.

More importantly, it points the way to the day when high-speed "brains" will eliminate most of the forecaster's personal opinions from his predictions.

To make a weather prediction, meteorologists have to know the large-scale motions of the atmosphere. If these were made visible by a vast number of free-floating balloons at about 20,000 feet above the surface, an observer on an earth-circling satellite

would soon notice the balloons all drifted eastward relative to the earth.

Looking more closely, such an observer would see that the speed of this westerly current was not the same from pole to pole, but varied slowly with latitude. It would move fastest over the some 2,000 miles of the temperate zones, or midlatitudes, becoming much weaker or even reversing its direction over the poles and the equator.

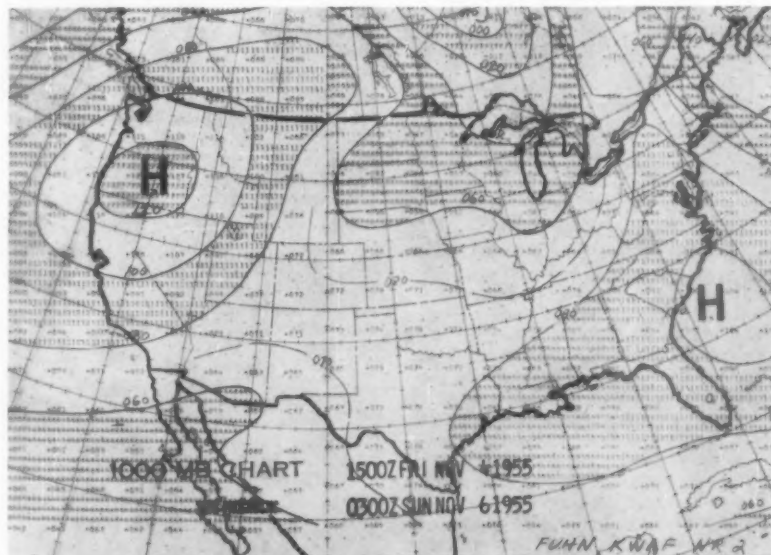
Has Meandering Path

The high-level river of air over the mid-latitudes does not flow in a straight path, but meanders as it moves, in much the same way a nearby stream meanders. Weathermen call this great meandering current the planetary wave.

Even more careful observation of the balloons' movements would reveal a constantly changing series of whirlpools and eddies embedded in the giant river of air.

Continuously forming and disintegrating, these whirling air masses are depicted as highs and lows on weather maps. They also move from west to east, in a more or less regular way, at a speed slightly less than the planetary wave.

It is this regularity that first led to the



COMPUTER'S WEATHER PREDICTION—This weather map is a routine one produced by a giant electronic "brain" operated by the Joint Numerical Weather Prediction Unit at Suitland, Md. The computer has been making forecasts at least as accurate as those of practicing meteorologists for seven months. As the machine printed out its results, it shaded in the areas where pressures are within a certain range. To make the areas easy to visualize, humans drew the outlines around them.

crude kind of weather prediction embodied in such old proverbs as "Rain before seven, Shine before eleven," then later resulted in the art of weather forecasting. For by charting these flow patterns, meteorologists have learned to predict where highs and lows will move in the future, based on their repeating patterns.

Much more important, however, the atmosphere's regular motions show that air obeys the same laws as other fluids. These laws, known as the hydrodynamical equations, were first formulated in the early 19th century.

Using many short-cuts, meteorologists are learning to apply these laws to the atmosphere with the aid of a computer. The daily forecasts being turned out by the Joint Numerical Weather Prediction Unit in Suitland will continue to be improved as scientists learn more about using the equations governing atmospheric flow to calculate weather.

Fast Electronic Computer

The unit, run jointly by the Weather Bureau, Navy and Air Force, uses International Business Machines Corporation's electronic computer, the IBM 701, to make its forecasts. It is one of the few production models with the necessary speed and memory for numerical forecasting, according to Dr. George Cressman, director of the unit.

Although it was first suggested about 100 years ago that mathematical equations might be used to predict atmospheric flow, the difficulty of solving them was so great the attempt was not even made until 1922, when the British meteorologist, L. F. Richardson, made the first genuine numerical weather prediction.

However, he had to take many more short-cuts than now necessary with the computer, and the calculations still took many months. His results were very discouraging, and the required computing time was so prohibitive that use of numerical methods to make weather forecasts was dropped for about 20 years.

Reconsider Numerical Forecasts

During World War II, the promise of high-speed computers and the existence of much more complete weather information led meteorologists to consider again the possibilities of Richardson's numerical prediction.

Immediately after the war, scientists at the Institute for Advanced Study, Princeton, N. J., started active investigation of the problem. The group was sparked by Dr. John von Neumann, now an Atomic Energy Commissioner, Dr. Jule Charney and Dr. Philip D. Thompson, now an Air Force major attached to the Joint Numerical Weather Prediction Unit.

In 1948, Dr. Charney discovered that taking certain short-cuts with the equations would give predictions of high-level flow patterns with more resemblance to the real

atmosphere than had been possible using Richardson's model. When calculated on the computer, ENIAC, with actual weather data, the results were quite similar to the observed flow.

These and further experiments showed that a very simple numerical model could predict the behavior of large-scale atmospheric motions at least as accurately as humans could.

Improve Mathematical Models

Meteorologists at the Institute, at the Air Force Cambridge Research Center, and at the Institute for Meteorology, Stockholm, Sweden, under the direction of Dr. Carl-Gustaf Rossby, continued to work at improving the mathematical models used by the computer.

To Dr. Rossby's group goes credit for first use, in March, 1954, of current weather data to make an actual forecast of future weather.

By 1953, plans were made for daily operation of the computer in weather forecasting in the United States. The IBM 701 at Suitland was officially inaugurated on May 7, 1955.

Since May, the numerical weather experts at Suitland have shortened the time needed from first arrival of data until the machine

starts calculating weather from nearly seven hours to about two. They have done this by instructing the machine to analyze its own data, after it has been edited to a standard form. Until about a month ago, these data had to be plotted by humans, then transferred to the machine.

Science News Letter, December 3, 1955

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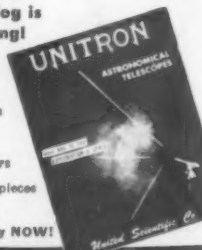
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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

THE BLOWFLIES OF CALIFORNIA (DIPTERA: CALLIPHORIDAE)—Maurice T. James—*University of California Press*, Bulletin of the California Insect Survey, Volume 4, No. 1, 34 p., illus., paper, 50 cents. Describing the pests, some of which are parasites on domestic animals and man.

THE CARPENTER BEES OF CALIFORNIA (HYMENOPTERA: APOIDEA)—Paul D. Hurd, Jr.—*University of California Press*, Bulletin of the California Insect Survey, Volume 4, No. 2, 38 p., illus., paper, 50 cents. These wood-boring bees cause damage not only to standing timber but to fence posts, bridge timbers, telephone poles, and even to buildings.

COMBUSTION RESEARCHES AND REVIEWS 1955—J. Barr and others—*Butterworths (Interscience)*, 187 p., illus., \$5.00. Invited papers presented at panel meetings held in Scheveningen, The Netherlands, and in Paris.

CONTROL OF NUCLEAR REACTORS AND POWER PLANTS—M. A. Schultz—*McGraw-Hill*, 313 p., illus., \$7.50. Presenting basic techniques but applying them particularly to the solid-fuel heterogeneous reactor.

DR. ALLAN FROMME'S BOOK ON SEX AND MARRIAGE—*Barnes & Noble*, 248 p., paper, \$1.50. A reprint of a book originally published in 1950 under the title "A Psychologist Looks at Sex and Marriage."

EUROPEAN ARCHITECTURE IN THE TWENTIETH CENTURY: Volume Two, Part III, The Era of Functionalism 1924-1933—Arnold Whittick—*Philosophical Library*, 271 p., illus., \$10.00. In the era covered here, building design was guided by the purpose of the building and advantage was taken of the new methods of construction.

FOUNDRY PRACTICES—S. E. Rusinoff—*American Technical Society*, 261 p., illus., \$6.50. A textbook for students also intended as a practical book for those already engaged in foundry work.

GAS TURBINES AND JET PROPULSION—G. Geoffrey Smith, revised and enlarged by F. C. Sheffield—*Iliffe (Philosophical Library)*, 6th ed., 412 p., illus., \$15.00. When the first edition of this book appeared in 1942, jet propulsion was considered as pioneering stuff and near madness. This edition contains descriptions of ramjets, pulsejets and rockets.

GLOSSARY OF PACKAGING TERMS—*Packaging Institute*, 2d ed., 323 p., \$6.75. This book contains, according to the publisher, "the language of a ten billion dollar industry."

HANDBOOK OF BARREL FINISHING—Ralph Enyedy—*Reinhold*, 255 p., illus., \$7.50. A handbook giving step-by-step instructions for this economical method of metal finishing.

THE HONEYGUIDES—Herbert Friedmann—*Smithsonian (Govt. Printing Office)*, 292 p., illus., paper, \$1.75. Reporting a study of this African bird that eats beeswax and lays its eggs in another bird's nest.

HYDRAULIC AND PNEUMATIC OPERATION OF MACHINES: A Handbook on the Use of Oil or Compressed Air for Driving and Controlling Machines and Vehicles—H. C. Town—*Philosophical Library*, 192 p., illus., \$7.50. For engineers and designers as well as for students.

INDOOR PLANTS AND HOW TO GROW THEM—A. Bertrand, translated from the French by Vera Higgins—*Philosophical Library*, 92 p.,

illus., \$4.75. Telling the amateur and housewife how to make their plants thrive.

MINERALS YEARBOOK 1952: Volume 1, Metals and Minerals (Except Fuels)—Staff, Bureau of Mines, Minerals Division—*Govt. Printing Office*, 1218 p., illus., \$4.00. Facts and figures having to do with important natural resources.

PLANT PROPAGATION PRACTICES—James S. Wells—*Macmillan*, 344 p., illus., \$7.50. A brief and simplified introduction to the more important fundamental principles that govern plant propagation.

THE POLAR AURORA—Carl Störmer—*Oxford University Press*, International Monographs on Radio, 403 p., illus., \$8.80. Summarizing the main results of over half a century of research on polar aurora by a distinguished mathematician and an enthusiastic amateur photographer.

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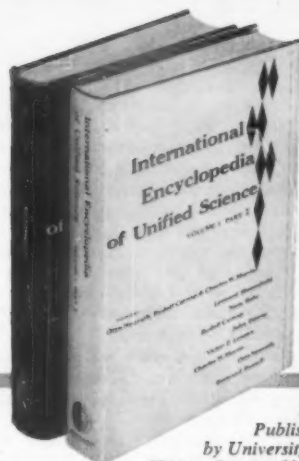
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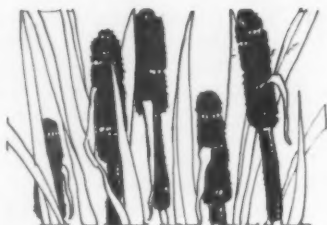
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Cattails and Statistics

► SOME SCIENTISTS believe that the true end of science is to reduce all natural phenomena to mathematical terms. It might seem pretty hopeless to try a mathematical analysis of a thick cattail stand. But armed with notebook, pencil, hipboots and mosquito repellent, scientists have been able to emerge from the swamps with a formidable array of cattail statistics.

For example, it has been found that a good cattail stand will average around 86,000 stems per acre. Furthermore, each of the brown spikes that give the cattail its name contains roughly 300,000 small seeds and several million fibers packed in an orderly arrangement.

Each of the seeds contains an umbrella-like collection of tiny hairs that allows the wind to carry the seeds over great distances. By count, there are from 40 to 60 of these hairs on each seed.

The seeds of one spike would be enough to plant six acres in a thick growth of cattails, yet the 300,000 seeds weigh only about one-third of an ounce.

There is much more to a cattail stand than meets the casual eye. In fact, there is probably more below the mud than above. Each of the stems that rustle in the wind arises from buried stems, or rhizomes, and it is estimated that there are about 140 tons of rhizomes per acre of cattail stand.

Besides arising from seed, cattails also reproduce by sprouting from these rhizomes. There may be as many as 35 shoots coming from a single plant in a growing season, and as much as three acres of cattails have been judged to be all one gigantic plant.

Moving from the swamp to the laboratory with a cattail collection, scientists have discovered that each of the minute seeds contains an oil, something like linseed oil. It has been calculated that if all available cattails in this country were processed, some 34,000,000 pounds of useful vegetable oil could be extracted from the seeds, leaving 166,000,000 pounds of cattail meal for livestock feed.

A type of flour can be made from the cattail rhizomes, with a yield of 32 tons dry weight per acre. A chemist found that by fermenting this flour he could convert up to 21% of the flour dry weight into ethyl alcohol.

As a footnote on the potentialities of cattails, it has been reported that the Romans make a "people's whiskey" from fermented cattails.

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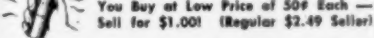
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❁ **PLAY HATS** made of tough plastic have been designed for young cowboys and firemen. Light and resilient, the hats are molded in the shape and detail of both real Westerns and firemen's helmets. Comfortable to wear, each is equipped with a chin strap.

Science News Letter, December 3, 1955

❁ **MINIATURE GOLF COURSE** for home practice consists of three indoor-outdoor portable holes. Made of plastic and colored green, the three holes simulate actual traps and hazards met on the average course. One has a gently rising ramp, the second three separation mounds and the third, a trap at the right.

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❁ **SAFETY BATHING DEVICE** for babies converts any sink or bathtub into a baby bath, as shown in the photograph. Designed for babies one to eight months of



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❁ **STEEL RACKS** for kitchen cabinets are coated with vinyl resins to protect china and glassware from damage. Available in white and other colors, the plastic coated shelves are easily cleaned and are rust-proof.

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❁ **MICRO-MOTOR** is self-starting and reversible. The voltage is four and one-half to six and the horsepower 1/750. Designed by British engineers, the micro-motor, it is claimed, can run 500 to 1,000 hours without attention.

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❁ **BAIT DISPENSER** for salmon eggs used in fishing is made to hold a two-ounce salmon egg bottle. The bottle is inserted into the plastic dispenser attached to a fisherman's belt. A knob is turned and, like a change maker, one salmon egg drops out.

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